

ChatDoctor: A Medical Chat Model Fine-Tuned on a Large Language Model Meta-AI (LLaMA) Using Medical Domain Knowledge

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Abstract

Objective The primary aim of this research was to address the limitations observed in the medical knowledge of prevalent large language models (LLMs) such as ChatGPT, by creating a specialized language model with enhanced accuracy in medical advice. **Methods** We achieved this by adapting and refining the large language model meta-AI (LLaMA) using a large dataset of 100,000 patient-doctor dialogues sourced from a widely used online medical consultation platform. These conversations were cleaned and anonymized to respect privacy concerns. In addition to the model refinement, we incorporated a self-directed information retrieval mechanism, allowing the model to access and utilize real-time information from online sources like Wikipedia and data from curated offline medical databases. **Results** The fine-tuning of the model with real-world patient-doctor interactions significantly improved the model's ability to understand patient needs and provide informed advice. By equipping the model with self-directed information retrieval from reliable online and offline sources, we observed substantial improvements in the accuracy of its responses. **Conclusion** Our proposed ChatDoctor, represents a significant advancement in medical LLMs, demonstrating a significant improvement in understanding patient inquiries and providing accurate advice. Given the high stakes and low error tolerance in the medical field, such enhancements in providing accurate and reliable information are not only beneficial but essential.